

# Self-force of a point charge in the spacetime of a massive wormhole

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## Abstract

We consider the self-potential and the self-force for an electrically charged particle at rest in a massive wormhole spacetime. We develop a general approach for the renormalization of the electromagnetic field of such a particle in the static spacetimes and apply it to the spacetime of a wormhole, the metric of which is a solution to the Einstein-scalar field equations in the case of a phantom massless scalar field. The self-force is found in manifest form; it is an attractive force. We discuss the peculiarities due to the parameter of the wormhole mass. © 2010 IOP Publishing Ltd.

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